

### ABSTRACT

A process for the production of hydrogen cyanide is provided, wherein hydrogen cyanide is synthesized by reacting methane or methane-containing natural gas, ammonia and oxygen-enriched air or oxygen in the presence of a catalyst comprising platinum or a platinum alloy; wherein the reactants are present in the following molar ratios

$$\frac{[\text{O}_2]}{[\text{O}_2 + \text{N}_2]} = 0.25 \text{ to } 1.0;$$

$$\frac{[\text{CH}_4]}{[\text{NH}_3]} = 0.95 \text{ to } 1.05; \text{ and}$$

where a molar ratio of ammonia to the sum of oxygen and nitrogen obeys the following relationship:  $Y = m \cdot X - a$ ,

wherein

$$Y = \frac{[\text{NH}_3]}{[\text{O}_2 + \text{N}_2]}$$

$$X = \frac{[\text{O}_2]}{[\text{O}_2 + \text{N}_2]}$$

$m = 1.25 \text{ to } 1.40$ ; and  $a = 0.05 \text{ to } 0.14$ .

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